

Generalized Stokes' problems for an incompressible couple stress fluid

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Abstract : In this paper, we investigate the generalized Stokes' problems for an incompressible couple stress fluid. Analytical solution of the governing equations is obtained in Laplace transform domain for each problem. A standard numerical inversion technique is used to invert the Laplace transform of the velocity in each case. The effect of various material parameters on velocity is discussed and the results are presented through graphs. It is observed that, the results are in tune with the observation of V.K.Stokes in connection with the variation of velocity in the flow between two parallel plates when the top one is moving with constant velocity and the bottom one is at rest.

Keywords : Couple stress fluid, Generalized Stokes' problems, Laplace transform, Numerical inversion.

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